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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/810,986	03/16/2001	Ross Callon	1014-002US01	7449
28863	7590	09/22/2004	EXAMINER	
SHUMAKER & SIEFFERT, P. A. 8425 SEASONS PARKWAY SUITE 105 ST. PAUL, MN 55125			PHAN, TRI H	
			ART UNIT	PAPER NUMBER
			2661	

DATE MAILED: 09/22/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/810,986

Applicant(s)

CALLON, ROSS

Examiner

Tri H. Phan

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-38 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-13 and 15-38 is/are rejected.
- 7) ☐ Claim(s) 14 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 07/16/2001.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

DETAILED ACTION

Drawings

1. The drawings are objected to because all blocks in Figures 1-2 and 7-8 should be labeled with descriptive legends based on 37 C.F.R. § 1.84(o) for supporting the objection in the Rules and M.P.E.P. A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Objections

2. Claims 17 and 37 are objected to because of the following informalities:

In claim 17, line 1, "claim 17" is a typographical error; it should be correct to -- claim 16

--.

In claim 37, line 1, "a table" should be correct to -- a database table -- for clarity.

Appropriate corrections are required.

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

3. Claims 18-22 are rejected under 35 U.S.C. 101 because the claimed inventions are directed to non-statutory subject matter.

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4. Claims 18-22 are directed to a data structure storing in the computer-readable medium, which is not a "process, machine, manufacture, or composition of matter, or any new and useful improvement thereof."

5. Claims 18-22 are rejected under 35 U.S.C. 101 because the claimed recitation of the data structure includes, for example the first, second, third and fourth data structures storing in the computer-readable medium, is considered as non-statutory subject matter, i.e., results in a claim which is not a proper descriptive material's claim that is not defined functional interrelationships between the data structure, which is limited to the practical application under 35 U.S.C. 101. See for example *MPEP*, Section 2105-1 and

<http://www.uspto.gov/web/offices/com/hearings/software/analysis/computer.html> under Section Non-Statutory Subject Matter of the claimed invention complies with 35 U.S.C. § 101.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. Claims 1, 2-3 and 9 are rejected under 35 U.S.C. 102(b) as being anticipated by **Coan et al.** (U.S.5,093,824).

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- In regard to claim 1, **Coan** discloses in Figs. 1-9 and in the respective portions of the specification about the system and method for providing a distributed protocol which is executed at each node and reconfigurable cross-connect nodes interconnected by links in the event of a single or multiple nodes or link failure to maintain the call-carrying capacity of the telecommunications network, e.g. *"computer network"*, (For example see Figs. 5-9B; Abstract; col. 1, line 50-56); when a node (*"router"*) is detecting a link failure or receiving other link failure message on the link (For example see col. 8, lines 23-25), it creates the failure state for the link in the LINKS array (*"generating link failure information"*) through the DEGREE, WORKING, SELECT and RECEIVE procedures (For example see col. 7, lines 23-34, 46-49; col. 8, lines 6-10) for a particular identifying link number is down (*"identifying a failed link"*; For example see col. 8, lines 54-58, 63-66; wherein each link incident is identifying by its identification number through the MAP function as disclosed in col. 7, lines 14-22) and floods the link failure message to other nodes in the network through the SEND procedure (*"communicating the link failure information to routers"*; For example see col. 7, lines 37-42, 66-68; col. 8, lines 25-35; where the execution of the protocol in the network is disclosed in Figs. 10-42; col. 8, lines 45-48).

- Regarding claims 2-3 and 9, **Coan** further discloses about the link failure message (*"link failure message"*) with the failure link state (*"link failure information"*) for a particular identifying link number in the link array is created by the node in the failure event (For example see col. 7, lines 11-45) and flooded to other cross-connect nodes or switches in the network (*"communicating to the routers"*; col. 6, lines 26-35); wherein the SEND, SELECT and

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UPDATE subroutines ("*update message*"; For example see col. 8, lines 2-5) in the WORKING procedure at each node are used to send the failure links incident message for updating or reconfiguring the node's configuration table ("*incorporating the link failure information within the update message*"; For example see col. 4, lines 58-68; col. 7, line 46 through col. 8, line 27; where the execution of the protocol in the network is disclosed in Figs. 10-42; col. 8, lines 45-48).

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 4, 7-8, 10-12, 23-24, 26-30 and 37-38 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Coan et al.** (U.S.5,093,824) in view of **Agarwal et al.** (U.S.6,760,777).

- In regard to claims 4 and 7-8, **Coan** discloses all the subject matter of the claimed invention as discussed in part 7 above of this Office action, about the inventive distributed protocol for maintaining the call on the event of the single or multiple nodes or link failure, but fails to explicitly disclose the inventive distributed protocol as "*Border Gateway Protocol*" or BGP as in the claimed invention. However, such implementation is known in the art.

For example, **Agarwal** discloses in Figs. 1-5 and in the respective portions of the specification about the system and method for distributing the path-vector routing protocol ("*path vector routing algorithm*") such as router-distributed Border Gateway Protocol 'rdBGP' ("*routing data with BGP*") for establishing routing sessions within multiprocessor router and external protocol peers, calculating set of routes including best route, sharing or exchanging route information with external protocol peers 'eBGP', and updating route information from other instances of received rdBGP information ("*generating update message*") to establish redundant communication sessions with external protocol peers and providing fault tolerance (For example see Figs. 3-5; Abstract; col. 1, lines 30-56; col. 2, lines 46-65). **Agarwal** further discloses about the rdBGP update and procedure for explicit route withdrawal based on route path attributes ("For example see col. 7, lines 1-10).

Thus it would have been obvious to the person of ordinary skill in the art at the time of the invention was made to implement the use of distributing the path-vector routing protocol such as router-distributed Border Gateway Protocol 'rdBGP' as taught by **Agarwal** in the **Coan's** distributed protocol, with the motivation being to provide fault tolerance by establishing redundant communication sessions with external protocol peers as disclosed in **Agarwal**: col. 3, lines 45-48.

- In regard to claims 10-11, 23 and 26, **Coan** discloses all the subject matter of the claimed invention as discussed in part 7 above of this Office action, about the inventive distributed protocol for maintaining the call on the event of the single or multiple digital cross-connection nodes or link failure stored in the configuration table ("*storing link failure*

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information"; For example see Figs. 5, 7, 9B; col. 5, lines 1-5) through the use of SEND, RECEIVE and WORKING procedure ("*forwarding and receiving link failure information*"; For example see col. 7, lines 11-45; col. 7, line 66 through col. 8, line 35), but fails to explicitly disclose the inventive distributed protocol is "*path vector routing protocol*" as using "*BGP*" for routing as in the claimed invention. However, such implementation is known in the art.

For example, **Agarwal** discloses in Figs. 1-5 and in the respective portions of the specification about the system and method for distributing the path-vector routing protocol ("*path vector routing algorithm*") such as router-distributed Border Gateway Protocol 'rdBGP' ("*routing data with BGP*") for establishing routing sessions within multiprocessor router and external protocol peers, calculating set of routes including best route, sharing or exchanging route information with external protocol peers 'eBGP' ("*forwarding and receiving route information*"), and updating route information from other instances of received rdBGP information ("*generating update message*") to establish redundant communication sessions with external protocol peers and providing fault tolerance (For example see Figs. 3-5; Abstract; col. 1, lines 15-20, 30-56; col. 2, lines 46-65). **Agarwal** further discloses about the rdBGP update and procedure for explicit route withdrawal based on route path attributes ("For example see col. 7, lines 1-10).

Thus it would have been obvious to the person of ordinary skill in the art at the time of the invention was made to implement the use of distributing the path-vector routing protocol such as router-distributed Border Gateway Protocol 'rdBGP' as taught by **Agarwal** in the **Coan's** distributed protocol, with the motivation being to provide fault tolerance by establishing

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redundant communication sessions with external protocol peers as disclosed in **Agarwal**: col. 3, lines 45-48.

- Regarding claims 12, 24 and 30, **Coan** further discloses about selecting route based on the configuration table ("*routing table*"; For example see Figs. 10-42; col. 8, lines 45-48) based on the link failure.

Agarwal also discloses about the routers forwarding data packets between sub networks based on routing table ("*routing table*"; For example see col. 1, lines 15-56) and about the rdBGP update and procedure for explicit route withdrawal based on route path attributes ("*discarding route based on failed link path*"; For example see col. 7, lines 1-10).

- In regard to claims 27-29 and 37-38, **Coan** discloses all the subject matter of the claimed invention as discussed in part 7 above of this Office action, about the inventive distributed protocol for maintaining the call on the event of the single or multiple digital cross-connection nodes or link failure stored in the configuration tables ("*link failure information data store*" and "*routing table*"; For example see Figs. 5, 7, 9B; col. 5, lines 1-5; wherein different set of configuration tables are provided as set for normal case, e.g. precomputed configuration table for routing "*routing table*", and set for covered failure, e.g. "*link failure information data store*" as disclosed in col. 5, lines 55-57) through the use of SEND, RECEIVE and WORKING procedure ("*forwarding and receiving link failure information*"; For example see col. 7, lines 11-45; col. 7, line 66 through col. 8, line 35), but fails to explicitly disclose about the inventive

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distributed protocol as "*Border Gateway Protocol*" or BGP and about the "*control unit*".

However, such implementation is known in the art.

For example, **Agarwal** discloses in Figs. 1-5 and in the respective portions of the specification about the system and method for distributing the path-vector routing protocol ("*path vector routing algorithm*") such as router-distributed Border Gateway Protocol 'rdBGP' ("*routing data with BGP*") for establishing routing sessions within multiprocessor router ("*control unit*") and external protocol peers, calculating set of routes including best route, sharing or exchanging route information with external protocol peers 'eBGP' ("*forwarding and receiving route information*"), and updating route information from other instances of received rdBGP information ("*generating update message*") to establish redundant communication sessions with external protocol peers and providing fault tolerance (For example see Figs. 3-5; Abstract; col. 1, lines 15-20, 30-56; col. 2, lines 46-65). **Agarwal** further discloses about the rdBGP update and procedure for explicit route withdrawal based on route path attributes ("For example see col. 7, lines 1-10).

Thus it would have been obvious to the person of ordinary skill in the art at the time of the invention was made to implement the use of distributing the path-vector routing protocol such as router-distributed Border Gateway Protocol 'rdBGP' as taught by **Agarwal** in the **Coan's** distributed protocol, with the motivation being to provide fault tolerance by establishing redundant communication sessions with external protocol peers as disclosed in **Agarwal**: col. 3, lines 45-48.

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10. Claims 5-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Coan et al.** (U.S.5,093,824) in view of **D'Souza** (U.S.6,173,324).

- In regard to claims 5-6, **Coan** discloses all the subject matter of the claimed invention as discussed in part 7 above of this Office action, about the inventive distributed protocol for maintaining the call on the event of the single or multiple nodes or link failure, including the nodes interleave fashion through the FOR-LOOP for execution of the protocol ("*defining time period for using link failure information to control routing decision*"; For example see col. 8, lines 36—48; col. 6, lines 35-64; wherein the failure information stored in the configuration table between the executions of the procedure can be defined as "*time period*" or intervals between the FOR-LOOP of the protocol execution); but fails to explicitly disclose about "*generating data defining time period*". However, such implementation is known in the art.

For example, **D'Souza** discloses in Figs. 1-10 and in the respective portions of the specification about the system and method for proactively detecting and isolating connectivity troubles in high-speed data network, with the use of the three sub-routines such as *rtchk*, *bgpchk* and *ospfchk* in the monitor system (For example see Fig. 1; Abstract; where the monitor is executed within the interval or "*time period*" disclosed in col. 6, lines 12-19), including the steps as establishing state and time in both the reference file and current file for comparing and generating BGP Session State Fault ("*generating data defining time period*"; For example see Figs. 5, 7; col. 6, line 30-39; col. 6, line 63 through col. 7, line 13).

Thus it would have been obvious to the person of ordinary skill in the art at the time of the invention was made to combine the invention as taught by **D'Souza**, by implement the time

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reference in both the reference file and current file stored in database into the **Coan's** precomputed configuration table and the failure event information provided by the WORKING procedure, with the motivation being to provide the time reference between reference file and current file for comparing and generating fault as disclosed in **D'Souza**: col. 7, lines 27-36.

11. Claims 13, 15, 25 and 31-33 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Coan et al.** (U.S.5,093,824) in view of **Agarwal et al.** (U.S.6,760,777), further in view of **D'Souza** (U.S.6,173,324).

- Regarding claims 13, 15 and 25, the combination of **Agarwal** and **Coan's** system discloses all the subject matter of the claimed invention as discussed in part 9 of this Office action above, including the nodes interleave fashion through the FOR-LOOP for execution of the protocol ("*defining time period for using link failure information to control routing decision*"; For example see **Coan**: col. 8, lines 36—48; col. 6, lines 35-64; wherein the failure information stored in the configuration table between the executions of the procedure can be defined as "*valid time period*" or intervals between the FOR-LOOP of the protocol execution), where the status of the link is failed, i.e. LINKS = F, routing data with different paths during the intervals between the FOR-LOOP of the protocol execution, as disclosed in **Coan**: Figs. 10-42; and where **Agarwal** further discloses about forwarding the redundant copy to external router ("*forwarding additionally received copy of link failure information*"; For example see col. 8, lines 10-15); but fails to explicitly disclose about "*storage time period*". However, such implementation is known in the art.

For example, **D'Souza** discloses in Figs. 1-10 and in the respective portions of the specification about the system and method for proactively detecting and isolating connectivity troubles in high-speed data network, with the use of the three sub-routines such as *rtchk*, *bgpcchk* and *ospfchk* in the monitor system (For example see Fig. 1; Abstract; where the monitor is executed within the interval or "*valid time period*" disclosed in col. 6, lines 12-19), including the steps as establishing state and time in both the reference file and current file for comparing and generating BGP Session State Fault ("*storage time period*"; For example see Figs. 5, 7; col. 6, line 30-39; col. 6, line 63 through col. 7, line 13).

Thus it would have been obvious to the person of ordinary skill in the art at the time of the invention was made to combine the invention as taught by **D'Souza**, by implement the time reference in both the reference file and current file stored in database into the combination of **Agarwal** and **Coan's** precomputed configuration table and the failure event information provided by the WORKING procedure, with the motivation being to provide the time reference between the reference file and current file, for comparing and generating fault as disclosed in **D'Souza**: col. 7, lines 27-36.

- Regarding claims 31-33, the combination of **Agarwal** and **Coan's** system discloses all the subject matter of the claimed invention as discussed in part 9 of this Office action above, including the nodes interleave fashion through the FOR-LOOP for execution of the protocol ("*defining time period for using link failure information to control routing decision*"; For example see **Coan**: col. 8, lines 36—48; col. 6, lines 35-64; wherein the failure information stored in the configuration table between the executions of the procedure can be defined as

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“*valid time period*” or intervals between the FOR-LOOP of the protocol execution), where the status of the link is failed, i.e. LINKS = F, routing data with different paths during the intervals between the FOR-LOOP of the protocol execution, as disclosed in **Coan**: Figs. 10-42; but fails to explicitly disclose about “*storage time period*”. However, such implementation is known in the art.

For example, **D’Souza** discloses in Figs. 1-10 and in the respective portions of the specification about the system and method for proactively detecting and isolating connectivity troubles in high-speed data network, with the use of the three sub-routines such as *rtchk*, *bgpcchk* and *ospfchk* in the monitor system (For example see Fig. 1; Abstract; where the monitor is executed within the interval or “*valid time period*” disclosed in col. 6, lines 12-19), including the steps as establishing session state and time in both the reference file (“*storage time period*”) and current file (“*timestamp*”) for comparing and generating BGP Session State Fault (For example see Figs. 5, 7; col. 6, line 30-39; col. 6, line 63 through col. 7, line 13).

Thus it would have been obvious to the person of ordinary skill in the art at the time of the invention was made to combine the invention as taught by **D’Souza**, by implement the time reference in both the reference file and current file stored in database into the combination of **Agarwal** and **Coan**’s precomputed configuration table and the failure event information provided by the WORKING procedure, with the motivation being to provide the time reference between the reference file and current file, for comparing and generating fault as disclosed in **D’Souza**: col. 7, lines 27-36.

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12. Claims 16-17 and 34-36 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Coan et al.** (U.S.5,093,824) in view of **Agarwal et al.** (U.S.6,760,777), further in view of **Hardjono** (U.S.6,425,004).

- Regarding claims 16-17, the combination of **Agarwal** and **Coan's** system discloses all the subject matter of the claimed invention as discussed in part 9 of this Office action above, about the inventive distributed protocol for maintaining the call on the event of the single or multiple digital cross-connection nodes or link failure through the use of SEND, RECEIVE and WORKING procedure, but fails to explicitly disclose the “*verifying and authenticating information originated from neighboring router*” the link failure information. However, such implementation is known in the art.

For example, **Hardjono** discloses in Figs. 1-10 and in the respective portions of the specification about the detecting and locating the misbehaving device in the network domain, through the use of the two-level authentication scheme to allow the receiving device to authenticate the originating sector for the packet and to secure the trusted authority between sectors (“*verifying and authenticating information originated from neighboring router*”; For example see Figs. 1, 7-10; col. 1, lines 48-63; col. 5, lines 40-60; col. 5, line 61 through col. 6, line 18).

Thus it would have been obvious to the person of ordinary skill in the art at the time of the invention was made to combine the invention as taught by **Hardjono**, by implement the method for authenticating the originating sector for the packet and securing the trusted authority between sectors into the combination of **Agarwal** and **Coan's** system, with the motivation being

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to provide the secure and trusted authority between sectors, in which the misbehaving communication device is operated.

- Regarding claims 34-36, the combination of **Agarwal** and **Coan's** system further discloses about the local identification number for the link incident to the node (For example see **Coan**: col. 7, lines 14-22) and the redundant copy stored at the router/external routers (For example see **Agarwal**: col. 8, lines 12-14), but fails to explicitly disclose the “*security data for authenticating the originator*” of the link failure information. However, such implementation is known in the art.

For example, **Hardjono** discloses in Figs. 1-10 and in the respective portions of the specification about the detecting and locating the misbehaving device in the network domain, through the use of the two-level authentication scheme to allow the receiving device to authenticate the originating sector for the packet and to secure the trusted authority between sectors (“*verifying and authenticating information originated from neighboring router*”; For example see Figs. 1, 7-10; col. 1, lines 48-63; col. 5, lines 40-60; col. 5, line 61 through col. 6, line 18); wherein each router is associated with a unique router key (“*unique identifier*”; For example see col. 4, lines 20-35).

Thus it would have been obvious to the person of ordinary skill in the art at the time of the invention was made to combine the invention as taught by **Hardjono**, by implement the method for authenticating the originating sector for the packet and securing the trusted authority between sectors into the combination of **Agarwal** and **Coan's** system, with the motivation being

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to provide the secure and trusted authority between sectors, in which the misbehaving communication device is operated.

Allowable Subject Matter

13. Claim 14 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

14. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Cain et al. (U.S.6,757,289) and **Stone** (U.S.6,757,286) are all cited to show devices and methods for improving the network management in the telecommunication architectures, which are considered pertinent to the claimed invention.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tri H. Phan, whose telephone number is (571) 272-3074. The examiner can normally be reached on M-F (8:00-4:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kenneth Vanderpuye can be reached on (571) 272-3078.

Any response to this action should be mailed to:

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Commissioner of Patents and Trademarks

Washington, D.C. 20231

or faxed to:

(703) 872-9314

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive,
Arlington, VA, Sixth Floor.

Any inquiry of a general nature or relating to the status of this application or proceeding
should be directed to the Technology Center 2600 Customer Service Office, whose telephone
number is (703) 305-3900.



Tri H. Phan
September 20, 2004



FRANK DUONG
PRIMARY EXAMINER